

What is Claimed

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1. A lifting assembly arranged to lift an object which has a width dimension and is at least partially surrounded by a base surface which has a substantial horizontal alignment component, such as a manhole cover surrounded by a paved or ground surface, said assembly comprising:
- a. a base support assembly comprising;
 - i. a beam structure which has a lengthwise axis, is adapted to be positioned above the object, and has a length dimension greater than the width dimension of the object, said beam structure having a first pivot end and a second mobile end;
 - ii. a pivot support connected to the beam structure and located at the pivot end thereof, and arranged to support the pivot end of the beam structure from the base surface;
 - iii. a mobile support connected to the beam structure and located at the mobile end thereof, and arranged to support the mobile end of the beam structure from the base surface, said mobile support having mobile base surface engaging means to enable the

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mobile support to be moved
laterally over the base
surface;

- b. a lifting mechanism mounted to the
base support assembly and comprising
a lift connection to engage said
object and an actuating means to
lift said object

whereby said lifting assembly can be positioned
over said object with the pivot support being on
one side of said object and the mobile support
being on an opposite side of said object, so that
said lifting mechanism is able to raise said
object, and said lifting assembly can be moved
laterally so as to move said object.

~~2. The assembly as recited in claim 1,
wherein said pivot support is arranged to engage
said base surface in a manner to remain at a
substantially stationary base surface location
during movement of said lifting assembly~~

3. The assembly as recited in claim 2,
wherein the surface engaging ^{portion} means of the mobile
support is arranged to move in an arcuate path
having said stationary location of the pivot
support being at a center of said arcuate path.

4. The assembly as recited in claim 3,
wherein said surface engaging ^{portion} means comprises a
pair of base surface engaging wheels spaced on
opposite sides of the mobile end of the beam
structure.

5. The assembly as recited in claim 4,
wherein each of said wheels has an axis of
rotation, with the two axes of rotation converging

and meeting at substantially said location of the pivot support.

6. The assembly as recited in claim 2,
wherein said pivot support comprises a post
5 extending downwardly from the pivot end of the
beam structure, with a lower end of the post being
adapted to engage the base surface.

7. The assembly as recited in claim 1,
wherein said lifting mechanism comprises a lifting
10 jack mounted to said beam structure at an
intermediate location between the pivot end and
the mobile end of the beam structure.

8. The assembly as recited in claim 7,
wherein said jack has a substantially vertical
15 lift axis, and said jack has a lifting member
connecting at a lower end thereof to said lift
connection, said jack having said actuating means
to raise said lifting member relative to said beam
structure.

9. The assembly as recited in claim 8,
wherein said jack is a screw jack, comprising an
actuating screw vertically aligned in said jack,
and further comprising manually operable crank
20 means to turn said actuating screw.

10. The assembly as recited in claim 1,
wherein said lift connection comprises a pair of
collet fingers adapted to be positioned in a lift
opening of said object, and means to expand said
collet fingers outwardly to come into gripping
25 engagement with the surface of said lift opening.

11. The assembly as recited in claim 1,
wherein there is an auxiliary lift bar which has
an auxiliary lift connection to lift the object at
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an off center connecting location spaced from a center of gravity of said object, said lift bar having a lifting mechanism connecting portion adapted to be located near a center of gravity of said object and be connected to said lifting mechanism near said center of gravity, said auxiliary bar having a torque portion spaced from said center of gravity location, said torque portion having a torque member engaging said object at a location spaced from said off center connecting location to apply a torque from said auxiliary arm to said object so that said object is lifted entirely from said base surface.

12. The assembly as recited in claim 11, wherein said lifting mechanism connecting portion has adjustable connecting means whereby lift connection can be positioned at various distances from said center of gravity.

13. The assembly as recited in claim 1, wherein said object is a manhole cover, and said base surface is a paved or ground surface adjacent to said manhole cover.

14. A method of lifting an object which has a width dimension and is at least partially surrounded by a base surface which has a substantial horizontal alignment component, such as a manhole cover surrounded by a paved or ground surface, said method comprising:

- a. placing a base support assembly over said object so that;
 - i. a beam structure of the support assembly is positioned above the object,

- 5 said beam structure having a
 length dimension greater than
 the width dimension of the
 object, said beam structure
 having a first pivot end and
 a second mobile end;
- 10 ii. locating a pivot support which
 is connected to the beam
 structure and located at the
 pivot end of the beam
 structure on one side of the
 object to support the pivot
 end of the beam structure
 from the base surface;
- 15 iii. locating a mobile support
 connected to the beam
 structure and located at the
 mobile end thereof, and on
 opposite sides of the object
20 to support the mobile end of
 the beam structure from the
 base surface, said mobile
 support having mobile base
 surface engaging means to
25 enable the mobile support to
 be moved laterally over the
 base surface;
- 30 b. using a lifting mechanism mounted to
 the base support assembly to engage
 said object by a lift connection and
 utilize an actuating means of said
 lifting mechanism to lift said
 object;

c. moving said lifting assembly
laterally to move said object.

15. The method as recited in claim 14,
wherein said pivot support engages said base
5 surface at a substantially stationary base surface
location during movement of said lifting assembly.

16. The method as recited in claim 15,
wherein the surface engaging means of the mobile
support is moved in an arcuate path about said
10 stationary location of the pivot support as a
center of said arcuate path.

17. The method as recited in claim 16,
wherein said surface engaging means comprises a
pair of base surface engaging wheels spaced on
15 opposite sides of the mobile end of the beam
structure, and each of said wheels has an axis of
rotation, with the two axes of rotation converging
and meeting at substantially said location of the
pivot support.

20 18. The method as recited in claim 15,
wherein said pivot support comprises a post
extending downwardly from the pivot end of the
beam structure, with a lower end of the post being
adapted to engage the base surface.

25 19. The method as recited in claim 14,
wherein a lifting jack of said lifting mechanism
is mounted to said beam structure at an
intermediate location between the pivot end and
the mobile end of the beam structure and is used
30 to lift said object.

20. The method as recited in claim 14,
wherein said object is a manhole cover, and said

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